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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
09/148,723	09/03/98	FARNWORTH	W	MI22-981

021567
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QM12/0522

EXAMINER	
TUGBANG, D	
ART UNIT	**PAPER NUMBER**
3729	12

DATE MAILED: 05/22/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

5-22-00

Office Action Summary

Application No.	Applicant(s)
09/148,723	Farnworth et al
Examiner	**Group Art Unit**
A. Dexter Tugbang	3729

☒ Responsive to communication(s) filed on *Mar 13, 2000*.

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-3, 6, 8, 11-13, 20, 22-24, 26, 27, 29-31, 36, 37, and 41* is/are pending in the application.

Of the above, claim(s) *41* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-3, 6, 8, 11-13, 20, 22-24, 26, 27, 29-31, 36, and 37* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. The Applicants' amendment in Paper No. 10 (filed 3/13/00) has been fully considered and made of record.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restriction

3. Amended Claim 41 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The feature of " moving the plurality of balls...into each hole (lines 6-7) is drawn to Species C, Figure 3.

Since applicant has received an action on the merits for the originally presented invention of Species F, Figure 6, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, Claim 41 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by the publication to Kasulke et al. Applicants are referred to paragraph #5, of the previous Office Action, Paper #9, dated 12/9/99.

5. Claims 1, 3, 11, 12, 13, 27, 29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Desai et al 5,479,703. Applicants are to paragraph #7, of the previous Office Action, Paper #9, dated 12/9/99.

Claim Rejections - 35 USC § 103

6. Claims 2, 6, 8, 20, 22-24, 26, 30, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Desai et al in view of Kasulke et al. Applicants are to paragraph #9 of the previous Office Action, Paper #9, dated 12/9/99.

Response to Arguments

7. Applicant's arguments filed 3/13/00 have been fully considered but they have not been deemed to be found persuasive.

I. Kasulke et al, "Solder Ball Bumper (SSB) - A Flexible Equipment for FC, CSP, BGA, and Printed Circuit Boards".

In regards to the merits of Kasulke et al, the Applicants argue that the teachings of Kasulke fail to put the invention into public domain. Therefore, the rejections drawn to the merits of Kasulke are defective and should be withdrawn.

The Examiner has no reason to believe that the publication to Kasulke et al was not put into public domain. The publication to Kasulke et al appears to be a published document open to the public. Furthermore, if the publication to Kasulke et al was not a published document, then

why did the Applicants disclose this as relevant prior art in their IDS (Item AR in Paper No. 3)? Do the Applicants believe that Kasulke et al is not relevant prior art? Therefore, the Examiner maintains the rejections with regards to the merits of Kasulke et al.

II. Desai et al, U.S. Patent 5,479,703.

In regards to the merits of Desai et al, the Applicants argue that Desai does not teach the following: 1) the use of solder balls or balls of solder for joining substrates, 2) placement of the solder balls, 3) reflowing the solder balls and 4) removing the frame from around the balls of solder.

The Examiner respectfully traverses at least for the following reasons.

1) The use of the solder balls for joining substrates is discussed at, for example, col. 5, line 64 to col. 6, line 1:

> *"The chip is placed on top of the card so that the solder balls contact the appropriate points on the chip. The chip solder ball and card assembly is then* ***soldered together using known soldering techniques*** *discussed above."*

Where the above teaching is interpreted as joining substrates, i.e. the chip and card assembly.

2) Placement of the balls of solder is taught by Desai et al in, for example, Figure 4, in which Desai places balls 25 of solder in at least nine different locations.

3) Reflowing of the balls of solder is explicitly discussed beginning at col. 9, line 61 to col. 10, line 30.

4) The frame is broadly read as ball dispenser 100 and that the ball dispenser is used as part of an apparatus for performing the reflow process (see col. 9, lines 48-64). Subsequently, the ball dispenser is returned to an upright position, which is interpreted as removing the frame from around the balls of solder (see col. 10, lines 24-30), *after* bonding occurs.

With regards to Claim 22, the Applicants request further explanation as to why Claim 22 was mentioned in paragraph #7 of the previous Office Action, Paper #9, dated 12/9/99. The Examiner relied upon Desai for teaching a portion of the limitations in Claim 22, more specifically, the step of moving the frame from ball-to-ball to effectuate bonding. The limitations within Claim 22 drawn to the laser beam and laser bonding was relied upon from the teachings of Kasulke et al as stated in paragraph #9 of the previous Office Action, Paper #9. As such, Desai does not anticipate all of the limitations of Claim 22 as a whole and was not rejected under 35 U.S.C. 102. The combination of Desai et al and Kasulke et al was used to reject Claim 22 under 35 U.S.C. 103.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 19880; *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the

references to Desai et al and Kasulke et al each share the concept or field of endeavor for the use of balls of solder to effect bonding in solder applications.

In response to applicant's argument that Kasulke et al cannot be combined with Desai et al, the Applicants are reminded that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dexter Tugbang whose telephone number is (703) 308-7599.

5/18/00

LEE YOUNG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700

ADT

May 17, 2000